

NOISE/NEWS

INTERNATIONAL

Editorial Staff

J. Thompson, *Managing Editor*
+1.412.228.8029

Amnet Systems, *Editorial Assistant*
Luigi Maffei, *European Editor*
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Advertising Sales Manager

Cathy Vail, INCE Business Office
+1.703.437.4073
12100 Sunset Hills Road, Suite 130
Reston, VA 20190-3221

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the USA, Inc.
Business Office
12100 Sunset Hills Road, Suite 130
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ADVERTISING: For information about advertising, contact Cathy Vail, INCE Business Office +1.703.437.4073; e-mail: cathy@inceusa.org

INTER-NOISE 2016 Report

INTER-NOISE 2016, the 45th International Congress and Exposition on Noise Control Engineering, was held on August 21–24, 2016, at the Congress Center Hamburg (CCH) in Hamburg, Germany. Seven hundred and ninety-three (793) technical presentations were given at the conference. There were eight hundred and nineteen (819) papers distributed to conference attendees of the proceedings on a thumb drive. This conference was organized by Deutsche Gesellschaft für Akustik (DEGA). Otto von Estorff and Brigitte Schulte-Fortkamp served as the conference presidents, with Wolfgang Kropp serving as the technical program chair. Teresa Lehmann and Florian Hoffmann were the exhibition managers. Klaus Genuit served as the conference treasurer. The proceedings editor was Wolfgang Kropp.

The contributors to this conference came from around the world. There were 60 regions represented with large contributions from Germany, Japan, and Korea. There were 6 peer-assessed papers presented at the conference and 888 total papers presented. In addition, there were 95 poster papers presented. The major session topics are shown in Table 1.

Table 1. Major Session Topics

Active Control	Noise Barriers
Advanced Measurement Techniques	Numerical Acoustics
Aeroacoustics	Product Sound Quality
Aircraft Interior Noise	Psychoacoustics
Aircraft Noise, Exterior	Sound Power
Auralisation	Sound Propagation Outdoors
Building Acoustics	Soundscape
Dynamap	Train (Noise and Vibration)
Education	Tyre/Road Noise
Environmental Noise Directive	Underwater Acoustics and Ship Noise
Green Noise Control Measures	Urban Sound Planning
Industrial Noise	Vehicle Acoustic
Machinery Noise	Vibroacoustics
Materials	Wind Turbines
Noise and Health	

There were a large number of short courses offered in conjunction with the conference. These are summarized in Table 2.

There were also several satellite sessions held in conjunction with this conference. A series of sessions were offered in Berlin on the Thursday and Friday following the conference. There was also a Buy Quiet symposium on Thursday at the conference center in Hamburg. These are shown in Table 3.

There was an excellent accompanying person program with a tour arranged each morning of the conference and information on a large number of other tours and sightseeing opportunities. The conference registration is summarized in Table 4.

There were registrants from approximately 60 different countries.

Opening the Conference

The opening events for the conference were held on Sunday afternoon, August 21.

Table 2. Short Courses and Seminars Offered at INTER-NOISE 2016

Course	Organization
Course A: A General Framework for Structural Investigations	Dr.-Ing. Dejan Arsić and Dr. Dennis de Klerk
Course B: Evaluation and Assessment of Industrial Noise	Antonio Notario Tévar
Course C: Methods and Tools for Sound Design—Applications of Psychoacoustics	Dr. André Fiebig and Dr. Roland Sottek
Course D: Noise Control and Hearing Protector	Samir N. Y. Gerges
Course E: Real 3D Beamforming and Correlation Analysis	Benjamin Vonrhein and Michael Kerscher
Course F: Sound Source Localization Methods Based on Particle Velocity	Marcin Korbasiewicz



Photo 1. Conference Opening Entertainment—Frollein Sax

Table 3. Satellite Sessions

Session	Organizers/Chairs	Location
Buy Quiet	Marco Beltman, Robert Hellweg, Jean Jacques, Patrick Kurtz, and Jean Turret	Hamburg
Building Acoustics—Towards a Better Understanding	Heinz-Martin Fischer, Martin Schneider, Berndt Zeitler	Berlin
European Noise Policy	Regina Heinecke-Schmitt, Bernd Lehming	Berlin
Soundscape and Psychoacoustics—Using the Resources for Environmental Noise Protection	André Fiebig, Klaus Genuit, Brigitte Schulte-Fortkamp	Berlin

Table 4. Conference Registration

Category	Number
Registrants	1330
Young Professionals	16
Accompany Persons	43
Number of Exhibitors	54
Exhibitor Staff	120
No-shows	9 + 18 cancellations

Entertainment was provided by Frollein Sax, a quartet of saxophone players (see Photo 1). The conference was opened by the cochairs Otto von Estorff and Brigitte Schulte-Fortkamp (see Photos 2 and 3). This was followed by brief presentations by the state minister for the environment, Jens Kerstan (see Photo 4). He made a very strong case for the importance of noise as an environmental issue. This presentation was followed by a welcome by Jesko Verhey, the vice president of the German Acoustical Society (DEGA) (see Photo 5). Joachim Scheuren, the president of the International Institute of Noise Control Engineering (I-INCE) added his welcome (see Photo 6). He discussed the importance of this conference, which is the last he would preside over as president as his term comes to a close. These opening ceremonies were followed by the first plenary session, “The Noise in Our Head,” a very interesting presentation made by Sieglinde Geisel (see Photo 7). Ms. Geisel is a Swiss journalist and the author of a book on this same topic. Her book is *Only in the Universe, It Is Really Silent from Noise and the Longing for Silence*. It is published by Galiani Berlin and the ISBN is 978-3-86971-015-0. Her talk focused on how noise is perceived, with an interesting historical perspective on noise and the words used to describe it. She noted that, considering the tumultuous history of the anti-noise associations and the anti-noise laws, the paradox is that the world is getting louder and more and more



Photo 2. Otto von Estorff at Opening Ceremony



Photo 3. Brigitte Schulte-Fortkamp at Opening Ceremony



Photo 4. State Minister for the Environment, Jens Kerstan



Photo 5. Jesko Verhey, the Vice President of the German Acoustical Society



Photo 6. Joachim Scheuren, the President of the I-INCE Welcoming all to Conference



Photo 7. Sieglinde Geisel Giving Opening Plenary Lecture

people are fleeing the cities for silence. From history we know: Schopenhauer, Proust, and Kafka complained about noise, Carlyle built a soundproof study, and Kant ended up putting a too-loud rooster in the stockpot. But of course, nothing is more personal than the sound sensation.

This plenary session was followed by the opening ceremony for the conference. This was a very nice opening reception with a warm welcome to attendees from around the world.

Monday, August 22

The technical program began on Monday, August 22. There were 15 parallel sessions covering a wide array of topics. There were two keynote lectures at 11:00 a.m. and 11:30 a.m. At 11:00 a.m., Stephen Rizzi presented a lecture called “Toward Reduced Aircraft Community Noise Impact via a Perception-Influenced Design Approach” (see Photo 8). In this talk Dr. Rizzi noted that new aircraft designs are radically different and produce different noise signatures. He noted that the perception of sound is critical in understanding how people will react to the noise from these new designs and in regulating their noise emissions. He demonstrated the tools developed and validations conducted by NASA to be able to understand reaction to the potentially new sound characteristics. The connection between aircraft design and sound characteristics was well demonstrated in this lecture.



Photo 8. Stephen Rizzi Presenting Keynote Lecture



Photo 9. Thomas Beckenbauer Presenting Keynote Lecture

The second keynote lecture was by Thomas Beckenbauer and was titled “Tire/Road Noise Mitigation: A Challenge for Both Acoustical and Civil Engineers” (see Photo 9). Dr. Beckenbauer noted that even electric cars, which have eliminated many automotive noise sources, still run on roads with pneumatic tires. He indicated that much has been done to demonstrate that there are means to design quieter tires and roads. However, there are significant challenges to implementing and maintaining these quieter designs. His focus was on low-noise road surfaces and the progress that has been made. He presented a detailed discussion of such road surface, their construction, and considerations as to their performance over time.

There was a full slate of technical sessions on Monday covering a wide range of topics. The exhibition also opened on Monday. With 60 booths, this was an outstanding exhibition, spanning interests from instrumentation to building materials. An evening reception was held in the exhibition area and was well attended.

An important event on Monday, August 22 was the special session honoring Manfred Heckl—a pioneer in engineering acoustics.

This session, chaired by Joachim Scheuren, Werner Scholl, and Wolfgang Kropp, was an excellent tribute to this early visionary. There were presentations from many who worked with him honoring both his technical achievements and his life as a leader in the field.

In the afternoon of this first day, the young professionals program was conducted by Raj Singh. This session was well attended and included the award of YP grants to 16 young professionals (See Photos 10 and 11 and Table 5). There was a reception afterward providing a chance for one-on-one interactions between the young professionals and I-INCE officers and board members. I-INCE’s highly successful Young Professionals Grant competition has been offered since 2010 in order for noise control engineering students and young professionals—all typically within the first ten years of their careers—to attend the INTER-NOISE Congress. The goals of the grant are to expose students and young acousticians to senior professionals, give them experience in public presentation and paper writing, and assist them in the development of networking skills.

Overall, 120 grants (out of 247) were awarded between 2010 and 2016, as shown in Table 6. For INTER-NOISE 2016, I-INCE had allocated 16 grants. Funds for 20 grants (600 EUR per person) have been allocated for INTER-NOISE 2017 and 2018 each. This brings I-INCE’s total allocation of funds for the grant and

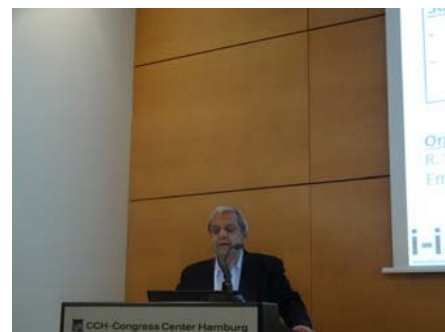


Photo 10. Raj Singh Opening Young Professionals Workshop



Photo 11. Young Professionals Workshop

Table 5. 2016 Young Professionals Grant (I-INCE) Winners

Name	Status	Country
Simon Brown	Student	United Kingdom
Susumu Hirakawa	Student	Japan/United Kingdom
Paramasivam Balakrishnan	Student	India
Gil Jun Lee	Student	Republic of Korea/USA
Shahab Fatima	YP (Post-doc)	India
Marko Janković	Student	Serbia
Joshua Meggitt	Student	United Kingdom
Alexander Lee	YP	Republic of Korea/Germany/Switzerland
Yuanfang Zhang	Student	China/France
Chang Liu	Student	China/The Netherlands
Behshad Noori	Student	Iran/Spain
Miodrag Stanojević	Student	Serbia
Ana Đorđević	Student	Serbia
Daniel Steele	Student	USA/Canada
Dongwoo Min	Student	Republic of Korea
Gahee Kwon	Student	Republic of Korea

workshop to 88,500 EUR for a period of nine years (2010–2018). As of this writing, 38 countries have been represented. More details about the demographic spread, as well as the announcement for the INTER-NOISE 2017 grant competition (to be posted soon), can be found [here](#).

How Does the Grant Program Work?

A call for applications goes out about 9 months before the INTER-NOISE

Congress. Rules and other important information are posted on the Congress website as well as on the I-INCE website. These applications (often very good) are rigorously reviewed by the I-INCE panel. A provisional winners list is compiled and given to the technical program chair and staff of the INTER-NOISE Congress, and the best of the remaining candidates are put on a waiting list in case a provisional winner is unable to attend the Congress.



Photo 12. Siv Leth Presenting Keynote Lecture

The Young Professionals Workshop

Every year we invite all of the winners of the grant to attend the young professionals workshop. During this workshop, grant recipients are presented with a certificate commemorating their achievement while also being given a chance to network and have informal discussions with senior noise control engineers and I-INCE leaders. The program of the workshop at INTER-NOISE 2016 included some returning favorites like “How to Network?” and “How to Publish a Paper on Noise?” This year, the young professionals were also given the “Perspective of a Young Professional” by previous grant recipient Dr. O. T. Sen, Istanbul Technical University (Turkey). More information is given [here](#).

Tuesday, August 23

Again on Tuesday there were 15 parallel technical sessions in operation covering a wide range of topics. The two keynote lectures were at 11:00 a.m. and 11:30 a.m. The first keynote was by Siv Leth (see Photo 12). The title of her presentation was “Silent Electric Train Transportation—Present and Future Technologies.” This presentation provided a thorough discussion of noise control projects to

reduce primarily electric train noise. The programs conducted, both experimental and analytical, were described and the reductions accomplished were described. The lecturer noted that the difference between electric cars connected as a train and electrical multiple units forming

trains are diminishing, and hence also the research question will have to evolve for noise control of new electric rolling stock as well as new all electric vehicles.

The second keynote lecture was by Christ de Jong. The topic was “Underwater



Photo 13. Christ de Jong Presenting Keynote Lecture



Photo 14. Marc Schönwiesner Presenting Closing Plenary Lecture

Radiated Noise of Ships: Measurement and Mitigation” (see Photo 13). The various noise sources of underwater noise from ships were discussed by this author. He noted that there is a wide range in radiated noise with many military ships being relatively quiet and older commercial ships being the noisiest. A procedure for the dedicated pass-by tests, in which the ship cooperates to have its radiated noise measured at various speeds and settings, was described as a first international standard for surface ship radiated noise measurements (ISO 17208-1). There is still a great deal of effort to understand the uncertainty in ship pass-by measurements.

Both the technical sessions and the exhibition continued through this day. There was active participation in both with many excellent papers.

Wednesday, August 24

There was a full slate of technical sessions until 2:00 p.m. on Wednesday.

Table 6. Distribution of YP Grant Winners Since 2010

Country	Country of Origin	Country of Work/Study
Albania	1	0
Argentina	2	2
Australia	1	2
Austria	2	3
Belgium	4	4
Brazil	2	2
Canada	0	1
Chile	1	0
China	20	5
Czech Republic	1	0
Denmark	0	2
France	4	4
Germany	11	10
Hong Kong	0	1
Hungary	2	2
India	7	3
Indonesia	2	2
Iran	2	0
Italy	5	6
Japan	4	6
Korea	11	8
Malaysia	0	1
Netherlands	5	3
New Zealand	1	2
Pakistan	1	0
Poland	1	1
Russia	1	1
Serbia	4	4
Singapore	0	1
Spain	4	4
Sri Lanka	1	0
Sweden	1	4
Switzerland	1	2
Turkey	4	4
United Kingdom	4	13
USA	7	18
Vietnam	2	0
Zimbabwe	1	0



Photo 15. Award to Tor Kihlman



Photo 16. INTER-NOISE 2016 Volunteers and Staff

The final plenary lecture was presented by Marc Schönwiesner and was titled “Tuning the Brain for Sound: Solvable Problems in Auditory Neuroscience” (see Photo 14). This was a very interesting talk that was about neuroscience related to hearing as well as other topics. The presenter provided several interesting

examples where equipment was used to modify hearing localization of subjects to study the effects. These studies showed that most subjects adjusted quickly, and most surprisingly, adjusted almost immediately when the modification was removed. The presenter also demonstrated how sounds and even visual images

can be recreated from neural signals to interpret dreams and perhaps one day better understand hearing. While clearly not about noise control, this was an interesting and thought-provoking introduction to understanding the brain and its role in hearing and other forms of perception.

This plenary lecture was followed by the closing ceremonies. An important event during this session was the presentation of an award honoring the contributions of Tor Kihlman to I-INCE and the profession of noise control engineering (see Photo 15). This award was present by Joachim Scheuren, the president of I-INCE. More information about this award is provided in a separate feature.

Following this award, Otto von Estorff and Brigitte Schulte-Fortkamp, the conference cochairs, thanked all those who had participated in organizing and running the conference. They brought up all the student volunteers on stage for recognition of the outstanding work they had done (see Photo 16). They also recognized the entire organizational team.

The final presentations were brief announcements about the upcoming conferences: NOISE-CON 2017 in Grand Rapids, MI, USA, and INTER-NOISE 2018 in Chicago, IL, USA. At the final presentation, the organizers of INTER-NOISE 2017 invited everyone to come to Hong Kong August 27–30, 2017 (<http://www.internoise2017.org/index.php>).

I-INCE Young Professional Congress Attendance Grants for INTER-NOISE 2017

I-INCE has allocated funds to support 20 YP grants, each having a value of 600 EUR, to assist students and young professionals/engineers in attending the Congress. More details of the YP program can be found here: <http://i-ince.org/youngprofessionals.php> 